CLAIMS:

1. A system to fabricate holographic data storage media comprising:

a first reservoir to hold a first component of a multi-chemistry holographic formulation;

a second reservoir to hold a second component of the multi-chemistry holographic formulation;

a mixer to receive the first and second components and mix the first and second components to create the multi-chemistry holographic formulation, the mixer comprising a first stage including a first set of mixing elements and a second stage including a second set of mixing elements, wherein the mixing elements in the first stage are larger than the mixing elements in the second stage; and

a dispense nozzle to dispense the multi-chemistry holographic formulation from the mixer between two substrates.

2. The system of claim 1, the mixer further comprising a third stage including a third set of mixing elements, wherein the mixing elements in the second stage are larger than the mixing elements in the third stage.

3. The system of claim 2, wherein the mixing elements of the first and second and third stages comprise static mixing elements.

4. The system of claim 1, wherein the dispense nozzle is coated with boron oxide to reduce adhesion of the multi-chemistry holographic formulation to the dispense nozzle.

5. The system of claim 1, further comprising a cavity to hold the two substrates, wherein the cavity is pre-aligned such that when the multi-chemistry holographic formulation is dispensed between the two substrates, the two substrates are forced against the cavity and optically aligned to within one optical fringe.

6. The system of claim 1, further comprising a cavity to hold the two substrates, wherein the cavity is dynamically controlled such that when the multi-chemistry holographic formulation is dispensed between the two substrates, the cavity is adjusted to ensure parallelism of the media to within one optical fringe.

7. The system of claim 1, wherein the dispense nozzle center dispenses the multi-chemistry holographic formulation between the two substrates through a hole in at least one of the substrates.

8. The system of claim 1, further comprising at least one of:

a heating element to heat the multi-chemistry holographic formulation and accelerate curing of the multi-chemistry holographic formulation following dispense of the multi-chemistry holographic formulation between the two substrates;

a microwave radiation source to illuminate the multi-chemistry holographic formulation with microwaves and accelerate curing of the multi-chemistry holographic formulation following dispense of the multi-chemistry holographic formulation between the two substrates; and

an optical radiation source to illuminate the multi-chemistry holographic formulation and accelerate curing of the multi-chemistry holographic formulation following dispense of the multi-chemistry holographic formulation between the two substrates.

9. The system of claim 1, further comprising an ultraviolet radiation source to illuminate perimeters of the holographic data storage media and cure the multi-chemistry holographic formulation at the perimeters to seal the perimeters from environmental degradation.

10. A method to fabricate a holographic data storage medium comprising:

mixing at least a first and a second component to create a multi-chemistry holographic formulation using a mixer comprising a first stage including a first set of mixing elements and a second stage including a second set of mixing elements, wherein the mixing elements in the first stage are larger than the mixing elements in the second stage; and

dispensing the multi-chemistry holographic formulation between two substrates using a dispense nozzle.

11. The method of claim 10, wherein the mixer comprises a third stage including a third set of mixing elements, wherein the mixing elements in the second stage are larger than the mixing elements in the third stage.

12. The method of claim 11, wherein the mixer comprises a fourth stage including a fourth set of mixing elements, wherein the mixing elements in the third stage are larger than the mixing elements in the fourth stage.

13. The method of claim 11, wherein the first and second and third stages comprise static mixing elements.

14. The method of claim 10, wherein the dispense nozzle is coated with boron oxide to reduce adhesion of the multi-chemistry holographic formulation to the dispense nozzle.

15. The method of claim 10, further comprising pre-aligning a cavity to hold the two substrates to within one optical fringe, wherein the multi-chemistry holographic formulation is dispensed between the two substrates forcing the two substrates against the cavity.

16. The method of claim 10, further comprising dynamically controlling a cavity such that when the multi-chemistry holographic formulation is dispensed between the two substrates, the cavity is adjusted to ensure parallelism of the medium to within one optical fringe.

17. The method of claim 10, wherein dispensing comprises center dispensing the multi-chemistry holographic formulation between the two substrates through a hole in at least one of the substrates.

18. The method of claim 10, wherein the multi-chemistry holographic formulation includes a photoiniatator, a write monomer and a photosensitive dye, the method further comprising curing the multi-chemistry holographic formulation using radiation of a wavelength substantially sensitive to the photosensitive dye and substantially insensitive to the photoiniatator and the write monomer.

19. The method of claim 10, further comprising sealing a perimeter of the holographic data storage medium by illuminating the perimeter of the medium with ultraviolet radiation to create an environmental barrier.

20. The method of claim 10, further comprising curing a hub onto a center hole of the medium.